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Dr. Coleman is Professor of Radiology at Duke University Medical Center. He serves as Director of Nuclear Medicine and Vice Chairman of the Department of Radiology. A graduate of Washington University School of Medicine, Dr. Coleman completed training in Internal Medicine at Barnes Hospital in St. Louis and the Royal Victoria Hospital in Montreal before returning to Mallinckrodt Institute of Radiology for training in Nuclear Medicine. His first faculty appointment was at the Mallinckrodt Institute of Radiology, and he subsequently was appointed Director of Nuclear Medicine at the University of Utah before accepting a position at Duke University Medical Center where he has been for twenty years. While at Mallinckrodt Institute of Radiology, he became interested in positron emission tomography while it was being developed by Drs. Michael Phelps and Michel Ter-Pogossian. The Potential applications of PET were demonstrated at this time. He has been active in demonstrating the clinical applications of PET with a particular focus on oncology. Collaborating with Dr. Ned Patz, the use of PET in lung cancer has been investigated. On the national scene, regulatory and reimbursement aspects of PET have been of interest. He has served as the American Board of Nuclear Medicine, Chairman of the Residency Review Committee in Nuclear Medicine, President of the Institute of Clinical PET, and has served as chairman of multiple committees in the Society of Nuclear Medicine.

PET Imaging of Tumors

The major utilization of clinical PET is in oncology and utilizes FDG as the radiopharmaceutical. FDG imaging demonstrates the increased metabolism by malignant cells compared to normal cells. The initial clinical application of FDG PET was demonstrated in brain tumors, and the gradation of accumulation of FDG related to the degree of malignancy. Subsequent studies have documented the accuracy of FDG-PET in detecting and staging several different malignancies. Whole-body imaging has made a major impact on the ability of PET to document the distribution of malignancy.

FDG PET imaging is very accurate in determining if an indeterminate solitary pulmonary nodule is malignant and in staging lung cancer. The cost-effectiveness of PET has been demonstrated for these indications. Third-party payers have policies for paying for PET scans performed in the evaluation of solitary pulmonary nodules and staging lung cancer. The preliminary data on the use of FDG PET imaging in other malignancies supports its use in detecting liver metastases from colorectal cancer; staging the axilla in primary breast cancer; staging melanoma and lymphoma; and staging and detecting recurrence of head and neck cancer. The initial reports on the use of FDG-PET are encouraging in its use in musculoskeletal malignancy, ovarian cancer, pancreatic cancer, and thyroid cancer.